National Transportation Safety Board

The NTSB Safety Mission: From Investigation to Recommendation

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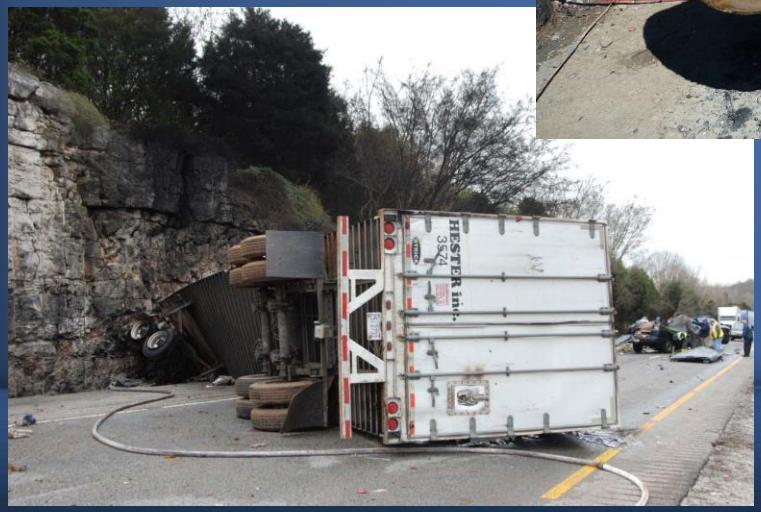
Board Member

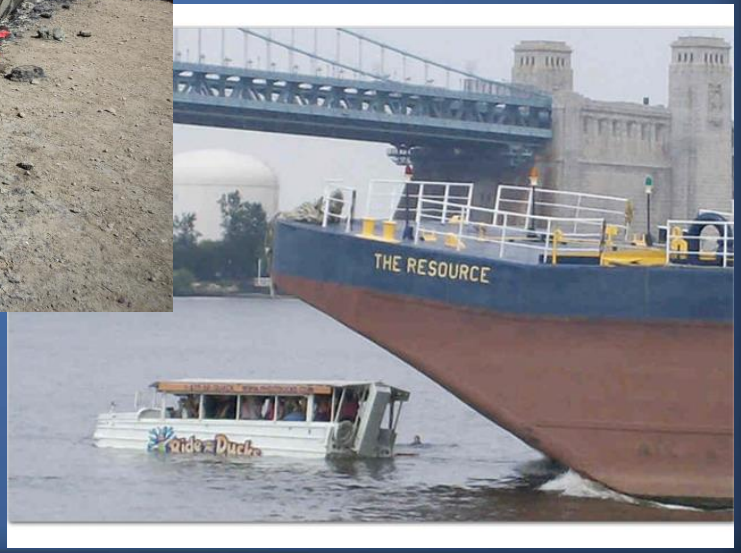
Brotherhood of Locomotive Engineers and Trainmen
July 16, 2014

1) determining the probable cause of transportation accidents

2) making recommendations to prevent their recurrence

All Modes



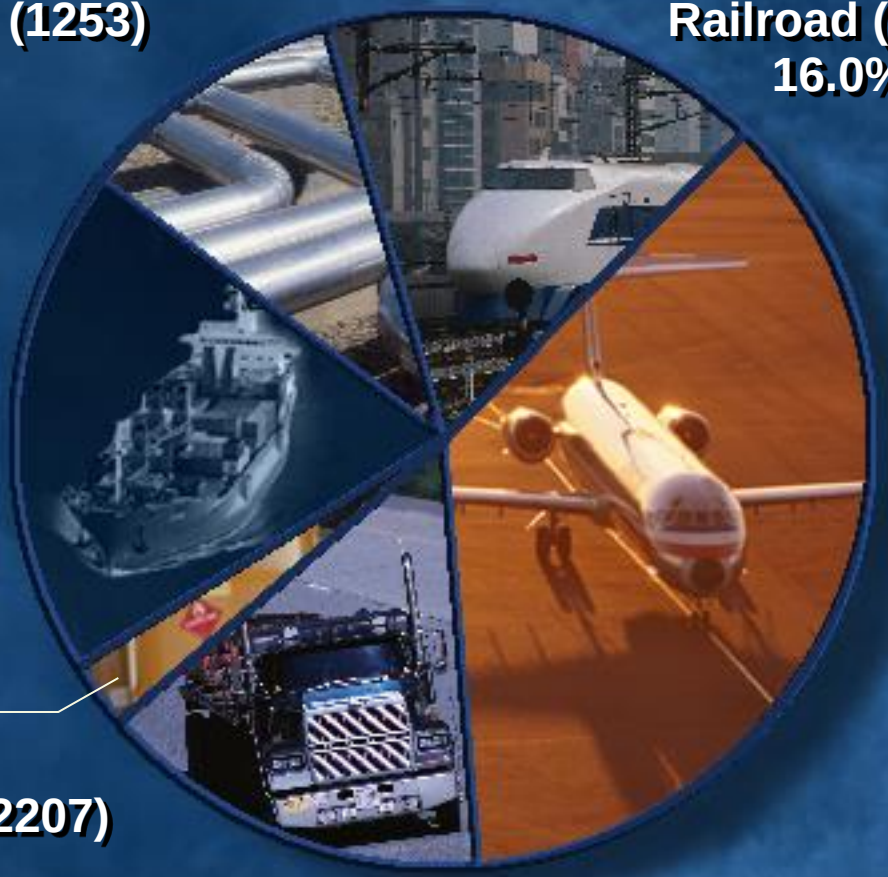


NTSB

Independent Federal Agency: Created in 1967

- >132,000 accident investigations
- 13,500+ safety recommendations
- ~ 2,500 organizations/recipients
- 82% acceptance rate

13,454 Safety Recommendations issued since 1967



Pipeline (1253)
9.3%

Railroad (2156)
16.0%

Marine (2352)
17.5%

Aviation (5252)
39.0%

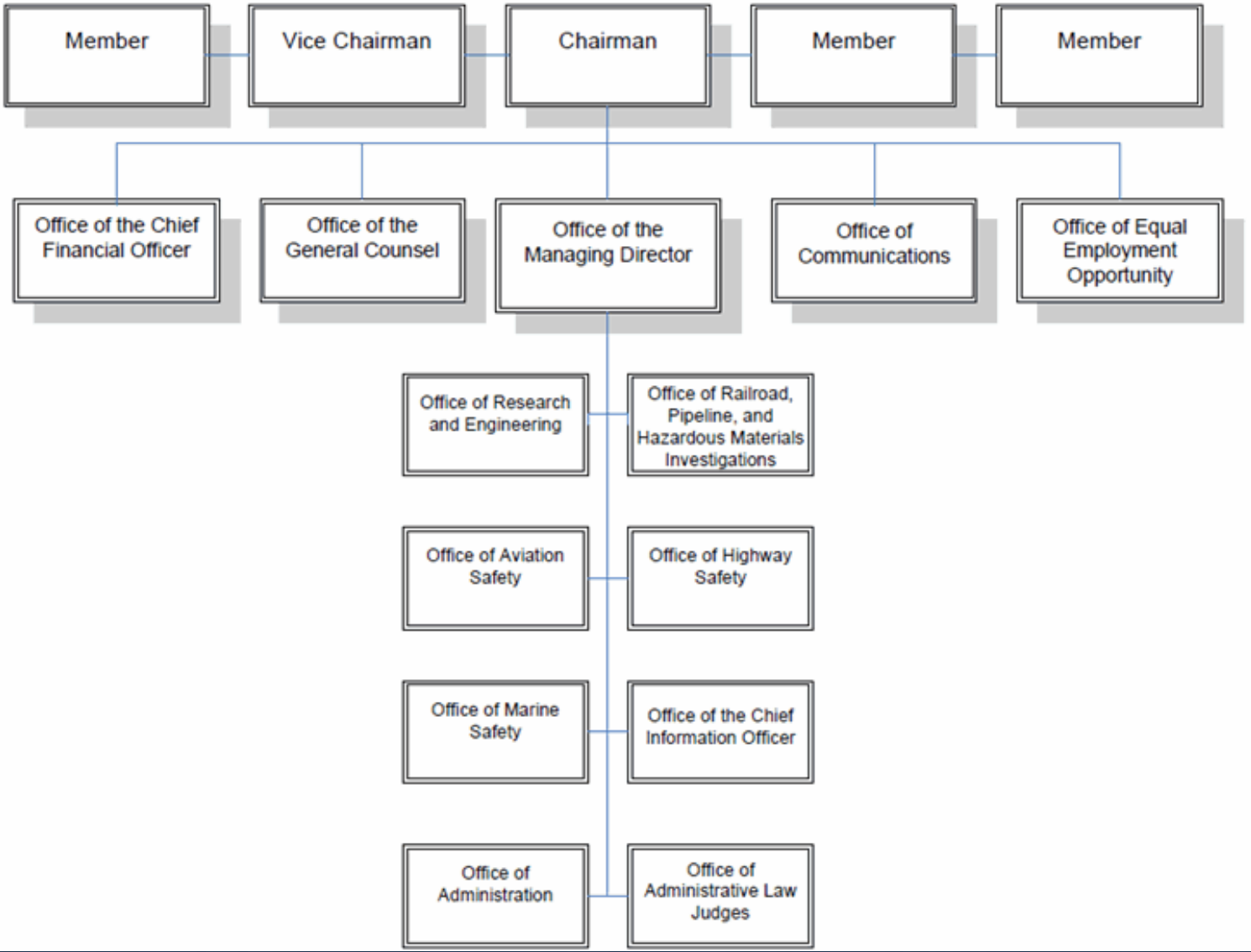
Intermodal (234)
1.7%

Highway (2207)
16.4%

NATIONAL TRANSPORTATION SAFETY BOARD

Rev: July 1, 2011

National Transportation Safety Board



NTSB: The Board

- Five Members:
  - President nominates
  - Senate confirms

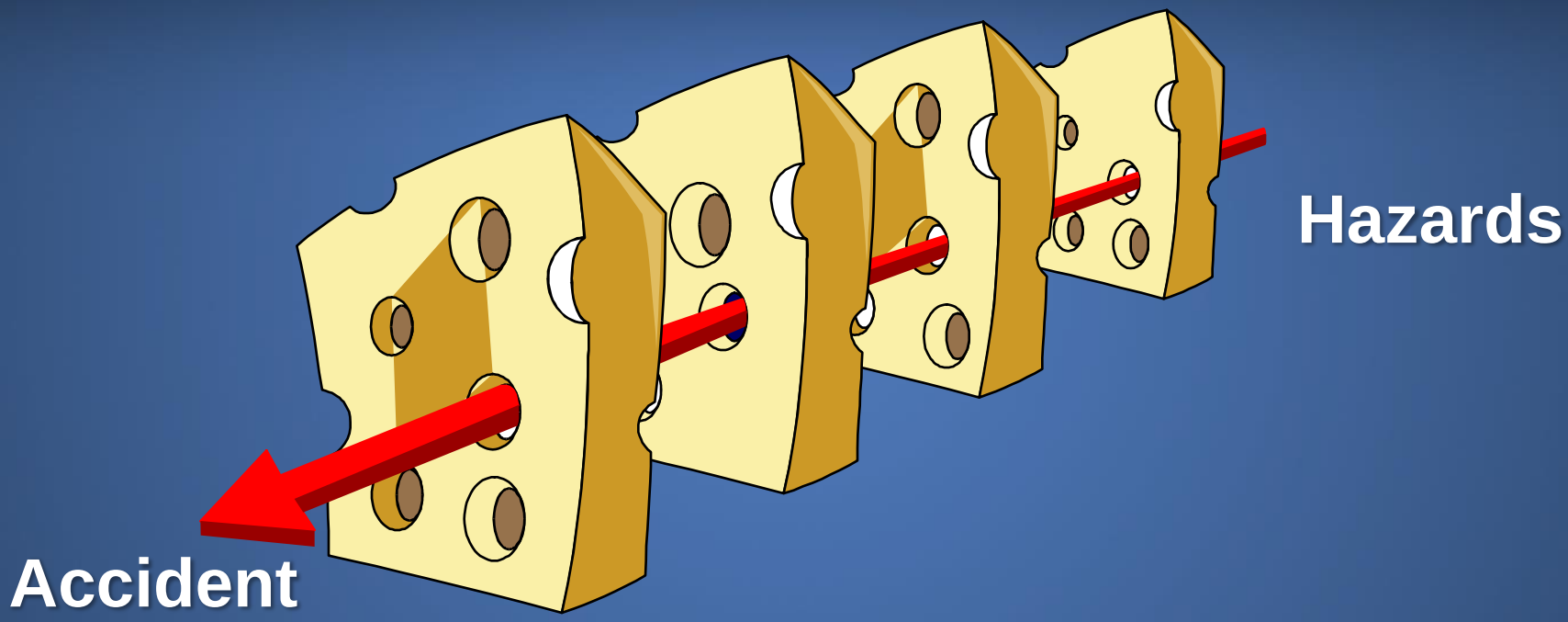
Earl Weener
Member

Robert Sumwalt
Member

Chris Hart
Acting Chairman

Mark Rosekind
Member

“Swiss Cheese” Model (Reason)



Successive layers of defenses, barriers, and safeguards

June 24, 2012
Goodwell,
Oklahoma

NTSB

Key On-scene Events

Organizational Meeting

- Designate parties and party coordinators
- Establish and organize groups

Progress Meetings

- Summarize findings
- Info for briefings

Family Briefings

Press Briefings

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NTSB Investigative Process

On-scene Investigation

Organizational Meeting

Groups and Parties

Progress meetings

Media Briefings

Press Releases

Preliminary Report

Factual information

Public Hearing

Fact finding

Depositions

Witnesses

Docket

Board Meeting

Docket

Findings

Conclusions

Probable Cause

Safety Recommendations

Final Report

Government in the Sunshine Act

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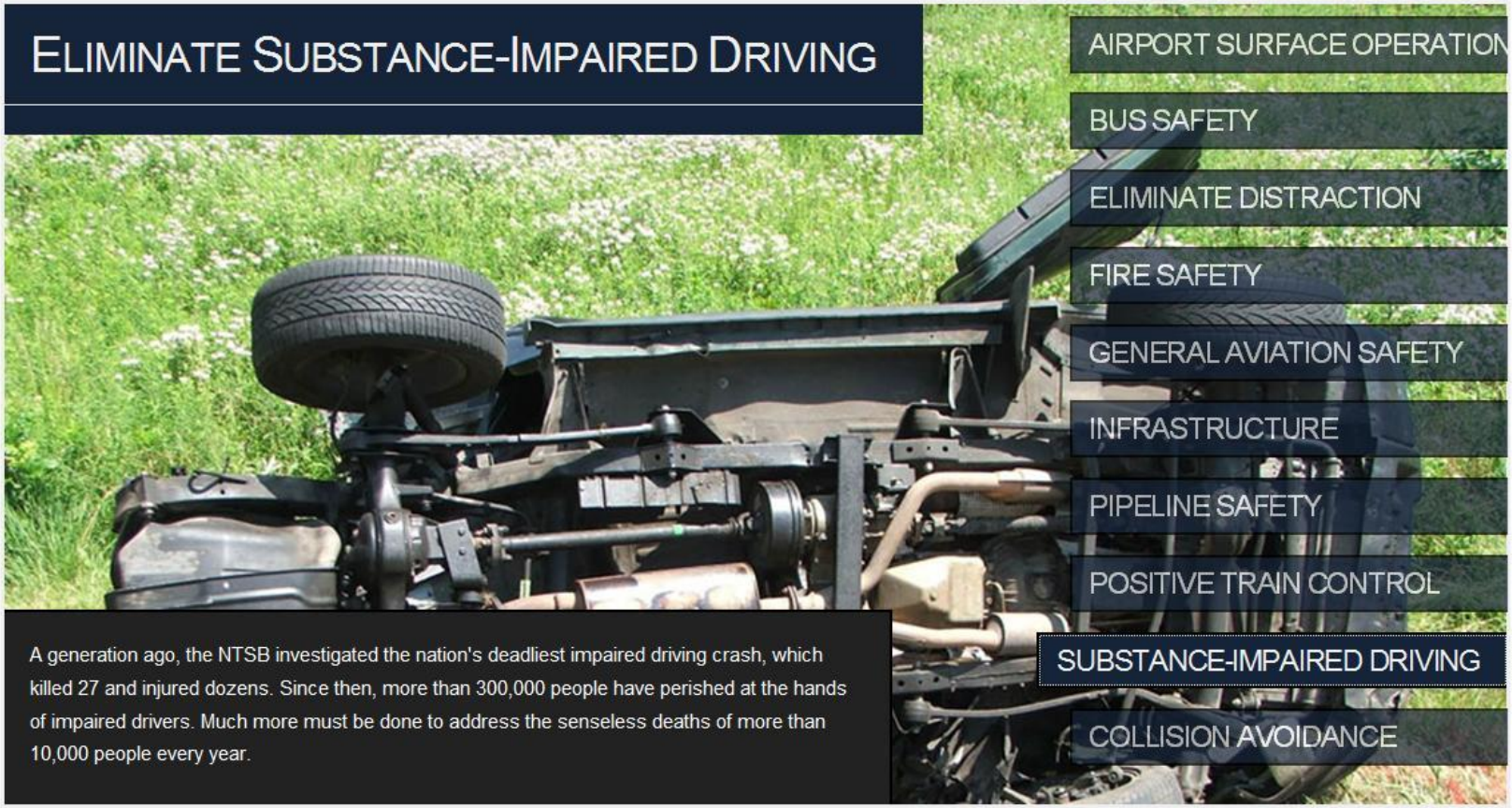
Most Wanted List

The Most Wanted List represents the NTSB's advocacy priorities. It is designed to increase awareness of, and support for, the most critical changes needed to reduce transportation accidents and save lives.



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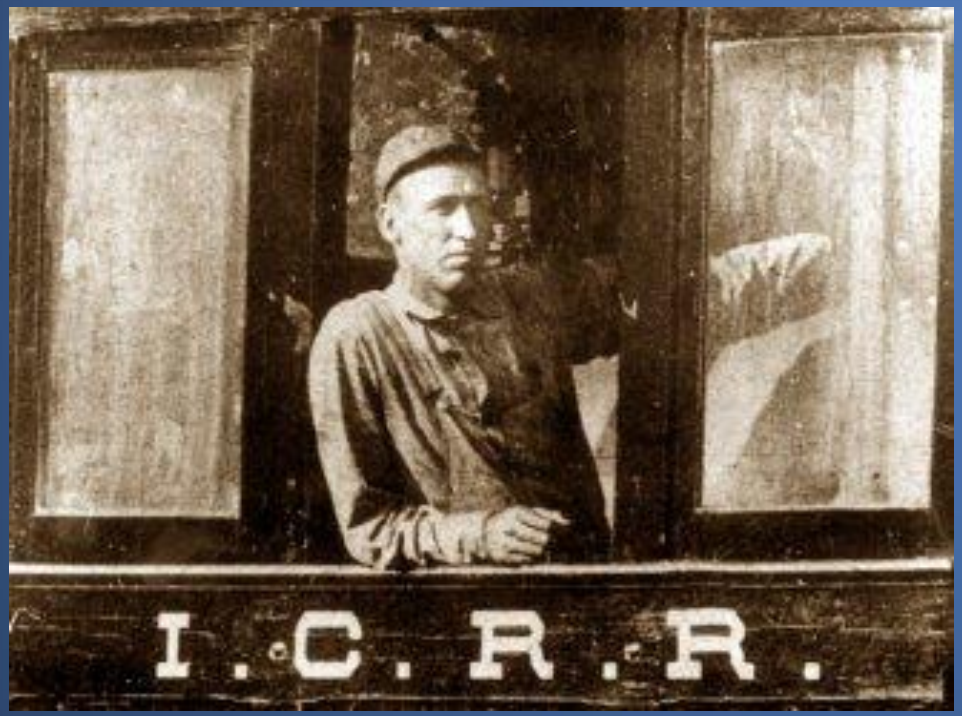
Casey Jones: Famous Railroad Engineer

Fatal accident on April 30, 1900 at 3:52 AM



"Engineer on No.1 failed to answer flagman who was out proper distance. It is supposed did not see the flag."

'impossible to believe that an engineer of Jones's experience would have ignored a flagman and fuses (flares) and torpedoes exploded on the rail to alert him to danger.'

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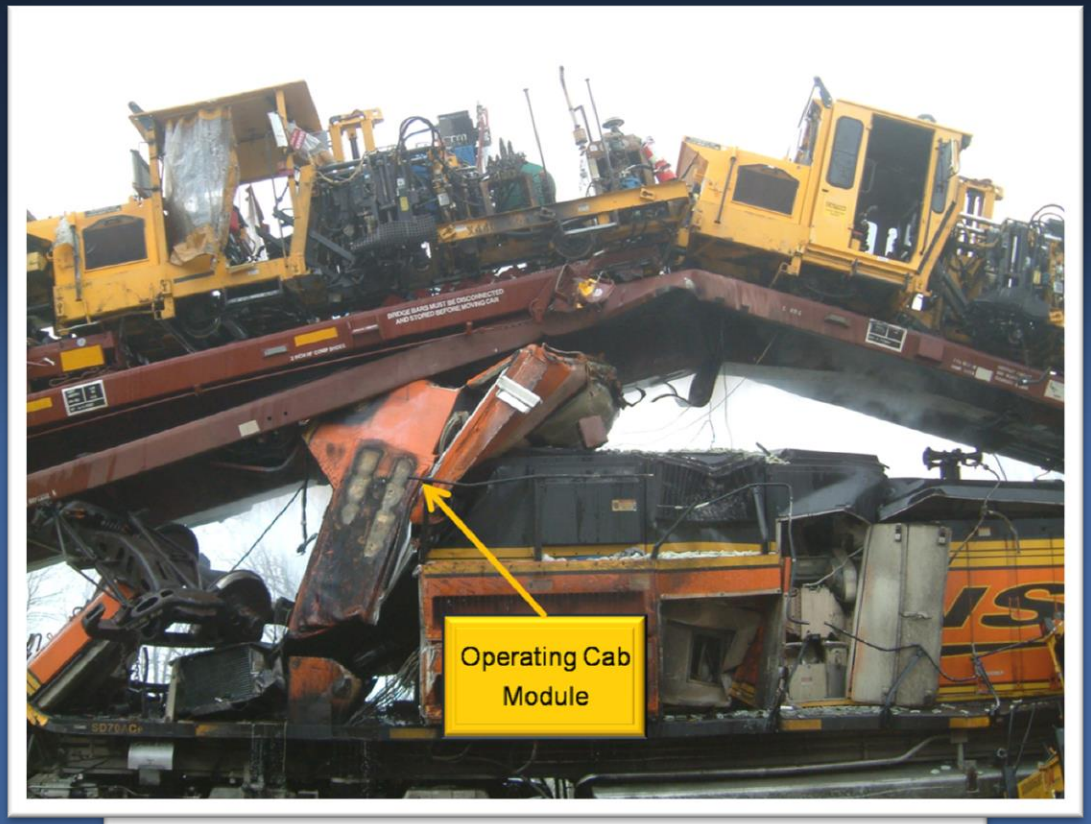
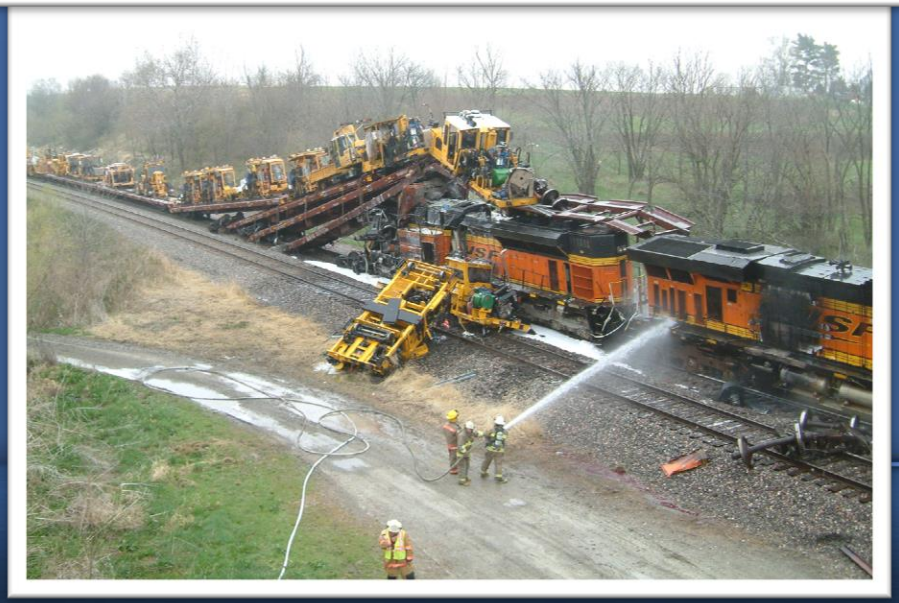
Track Path Animation

Collision Between Two BNSF Railway Freight Trains
Red Oak, Iowa
April 17, 2011
DCA11FR002





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Probable Cause (fatigue)

". . . failure of the crew of the striking train to comply with the signal indication requiring them to operate in accordance with restricted speed requirements and stop short of the standing train because they had fallen asleep due to fatigue resulting from their irregular work schedules and their medical conditions."

Four Fatigue Factors +

- Sleep loss
- Continuous hours of wakefulness
- Circadian/time of day
- Sleep disorders
- Other considerations

Fatigue Risks

Fatigue can degrade every aspect of human capability.

Fatigue Risks

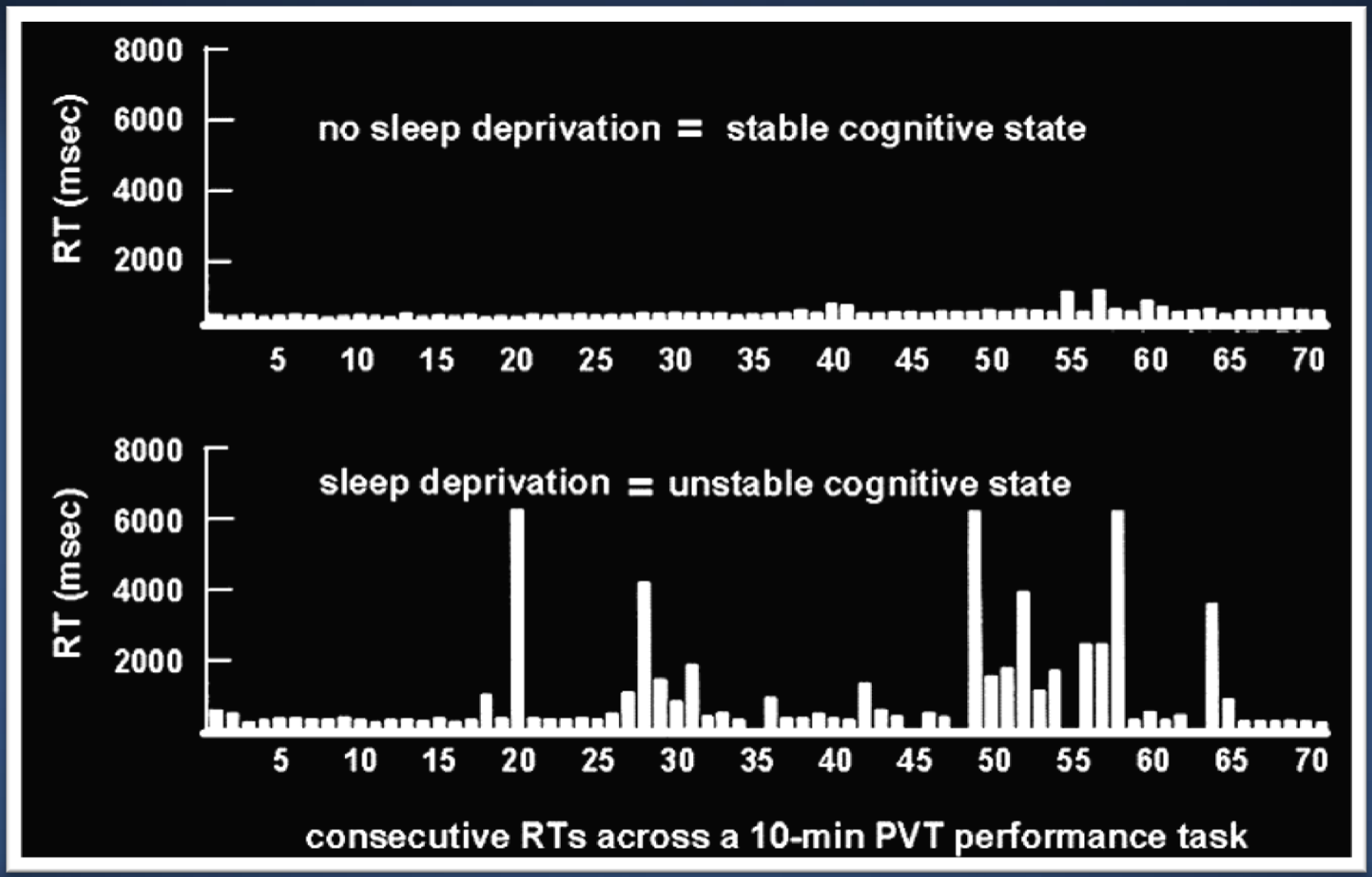
- degraded 20 – 50%+:

  - reaction time
  - memory
  - communication
  - situational awareness
  - judgment
  - attention
  - mood

- increased:

  - irritability
  - apathy
  - attentional lapses
  - microsleeps

Fatigue and Reaction Times



Doran SM, Van Dongen HP, Dinges DF. Sustained attention performance during sleep deprivation: evidence of state instability. *Archives of Italian Biology: Neuroscience* 2001;139:253-267.

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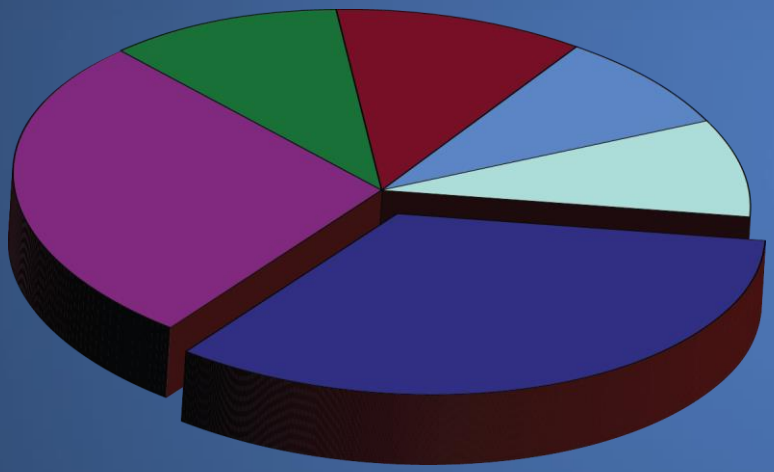
NTSB Recommendations

- MOST WANTED 1990 -2011
- >200 fatigue recommendations

Complex Issue:



Requires Multiple Solutions

- Scheduling Policies and Practices
- Education/Awareness
- Organizational Strategies
- Healthy Sleep
- Vehicle and Environmental Strategies
- Research and Evaluation

NTSB Safety Recommendations: Fatigue Status (May, 2012)

- Total: 194
- Open: 48
- Closed: 146
- CUN*: 26

CUN = closed unacceptable

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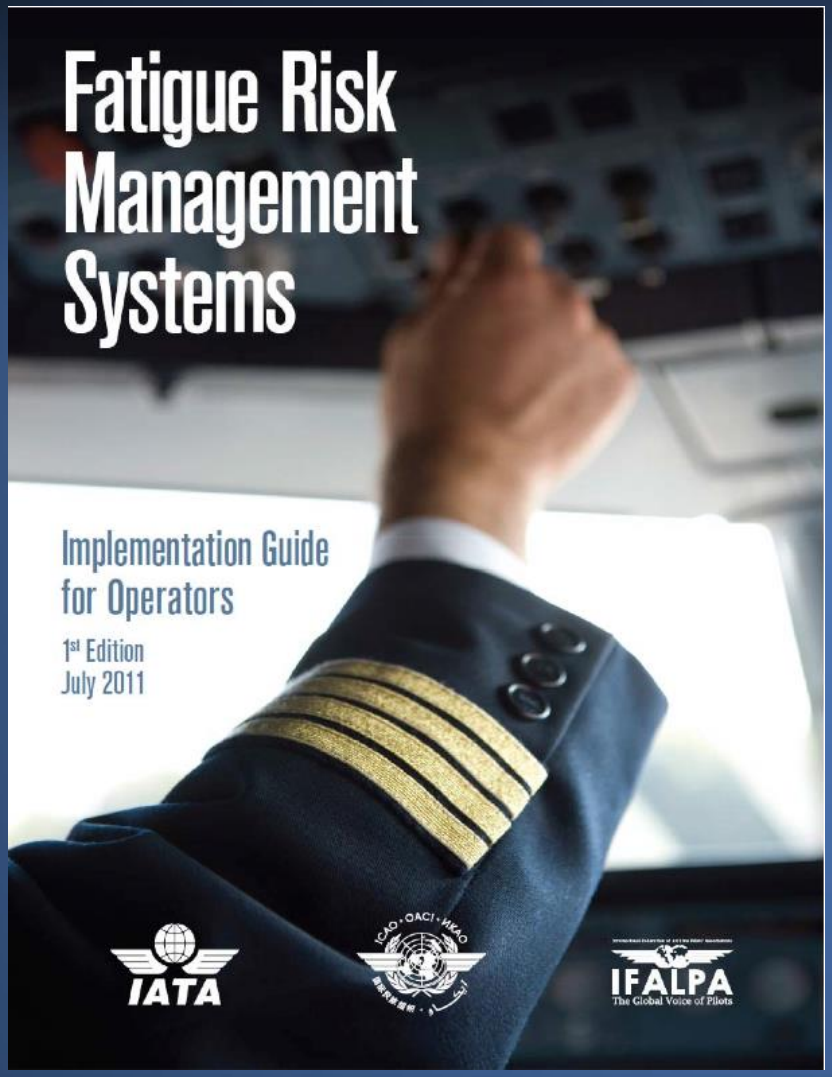
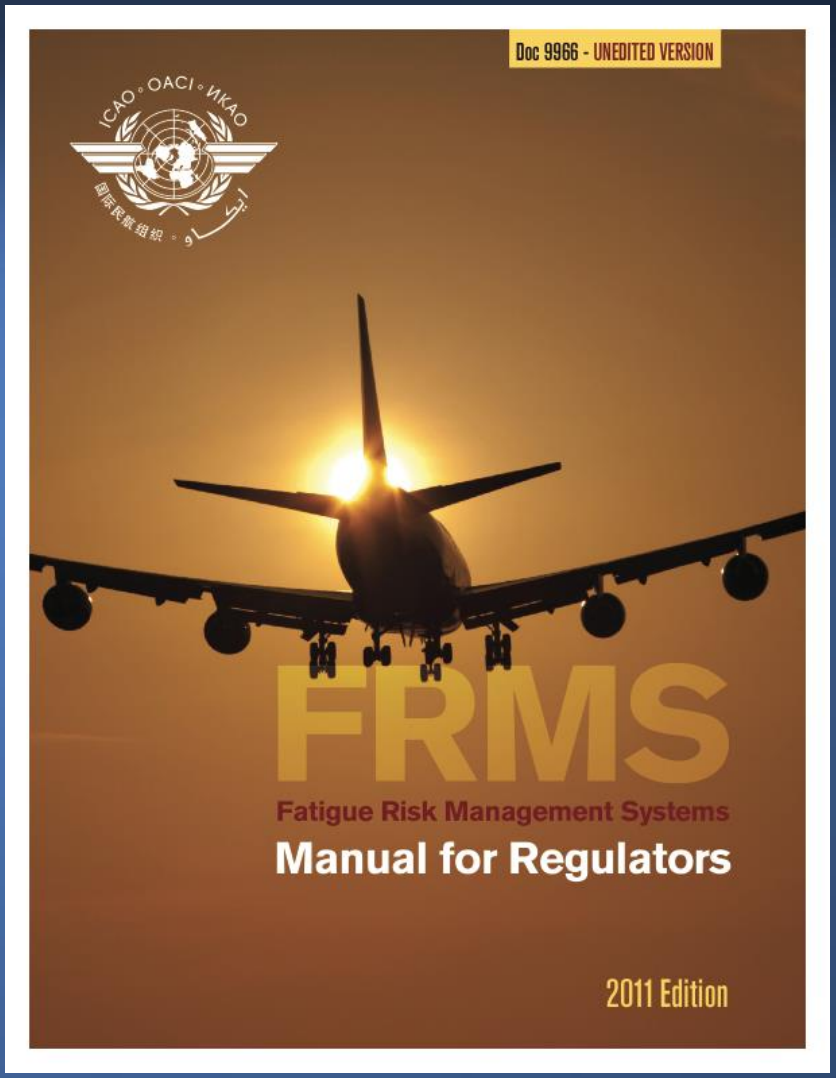
NTSB Fatigue Recommendations: Fatigue Management Systems

- Develop guidance based on empirical and scientific evidence for operators to establish fatigue management systems

- Establish an ongoing program to monitor, evaluate, report on, and continuously improve fatigue management programs implemented by motor carriers to identify, mitigate, and continuously reduce fatigue-related risks for drivers.

Examples


Fatigue Risk Management Systems
Implementation Guide for Operators
1st Edition
July 2011
IATA
ICAO • OACI • ИКАО
IFALPA
The Global Voice of Pilots


Doc 9966 - UNEDITED VERSION
ICAO • OACI • ИКАО
FRMS
Fatigue Risk Management Systems
Manual for Regulators
2011 Edition

Distraction: 10 Years of NTSB Investigations

Honorable John K. Lauber:

No Accident ≠
Safe Operation

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